IN THE CLAIMS:

This listing of claims replaces all prior versions, and listings, or claims in the application:

1. (Previously Presented) A gas sensor element for measuring a concentration of a specified gas component contained in a target gas, said gas sensor comprising:

a sensor portion having a solid electrolyte member and first and second electrodes, said solid electrolyte member having a first surface and a second surface opposite the first surface, said first and second electrodes being mounted on the first and second surfaces of the solid electrolyte member, respectively; and

a heater member having a heating element and one surface and an other surface opposite the one surface, said sensor portion being integrally laminated on the one surface of the heater member, said other surface of the heater member being contactable to the target gas,

wherein at least a part of said other surface of the heater member has a ten points average roughness, said ten points average roughness being no more than 1.71 μm, and

when a water drop falls onto said part of the other surface of the heater member, the roughness of said part of the other surface of the heater member repels the water drop so that the repelled water drop is rounded, thus reducing a contact area between the other surface of the heater member and the water drop.

2. (Original) A gas sensor element according to claim 1, wherein said at least part of other surface of the heater member has an area, said area being no less than 90 percent of an all area of said other surface of the heater member.

3. (Original) A gas sensor element according to claim 1, further comprising:

a plurality of external surfaces including the other surface of the heater member, at least two of said external surfaces being contactable to the target gas, each of said at least two of external surfaces having a ten points average roughness, said ten points average roughness of each of the at least two of external surfaces being no more than 1.71 μm.

4. (Original) A gas sensor element according to claim 1, wherein said other surface of the heater member is a polished surface.

5. (Previously Presented) A method of manufacturing a gas sensor element for measuring a concentration of a specified gas component contained in a target gas, said method comprising:

preparing a sensor portion, said sensor portion comprising a solid electrolyte member and first and second electrodes, said solid electrolyte member having a first surface and a second surface opposite the first surface, said first and second electrodes being mounted on the first and second surfaces of the solid electrolyte member, respectively;

preparing a heater member having a heating element and one surface and an other surface opposite the one surface;

integrally laminating the sensor portion on the one surface of the heater member, said other surface of the heater member being contactable to the target gas;

firing the integrally laminated sensor portion and heater member;

cooling the fired sensor portion and heater member; and

treating at least a part of the other surface of the heater member so that a ten points average roughness of the at least part of other surface of the heater member is no more than 1.71 μm, and

wherein when a water drop falls onto said part of the other surface of the heater member, the roughness of said part of the other surface of the heater member repels the water drop so that the repelled water drop is rounded, thus reducing a contact area between the other surface of the heater member and the water drop.

6. (Original) A method of manufacturing a gas sensor element according to claim 5, wherein said treating includes polishing the at least part of other surface of the heater member so that the ten points average roughness of the at least part of other surface of the heater member is no more than 1.71 μm.

7. (Currently Amended) A method of manufacturing a gas sensor element for measuring a concentration of a specified gas component contained in a target gas, said method comprising:

preparing a sensor portion, said sensor portion comprising a solid electrolyte member and first and second electrodes, said solid electrolyte member having a first surface and a second surface opposite the first surface, said first and second electrodes being mounted on the first and second surfaces of the solid electrolyte member, respectively;

preparing a heater member having a heating element and one surface and an other surface opposite of the one surface;

preparing a base member having a mount surface, at least a part of said mount surface having a ten points average roughness, said ten points average roughness of the at least part of the mount surface being no more than approximately 8.55 μm;

mounting the integrally laminated sensor portion and heater member on the mount surface of the base member so that the other surface of the heater member is contacted to the mount surface thereof;

firing the integrally laminated sensor portion and heater member while the laminated sensor portion and heater member is mounted on the base member;

cooling the fired sensor portion and heater member while the laminated sensor portion and heater member is mounted on the base member; and

separating the sensor portion and heater from the base member so that the other surface of the heater member has a ten points average roughness that is no more than 1.71 μm, and

wherein when a water drop falls onto said part of the other surface of the heater member, the roughness of said part of the other surface of the heater member repels the water drop so that the repelled water drop is rounded, thus reducing a contact area between the other surface of the heater member and the water drop.

8. (Previously Presented) A method of manufacturing a gas sensor element for measuring a concentration of a specified gas component contained in a target gas, said method comprising:

preparing a sensor portion, said sensor portion comprising a solid electrolyte member and first and second electrodes, said solid electrolyte member having a first surface and a second surface opposite the first surface, said first and second electrodes being mounted on the first and second surfaces of the solid electrolyte member, respectively;

preparing a heater member having a heating element and one surface and an another surface opposite the one surface;

preparing a base member having a mount surface, at least part of said mount surface having a ten points average roughness, said ten points average roughness of the at least part of the mount surface being more than approximately 8.55 μm;

mounting the integrally laminated sensor portion and heater member on the mount surface of the base member so that the other surface of the heater member is contacted to the mount surface thereof; firing the integrally laminated sensor portion and heater member while the laminated sensor portion and heater member is mounted on the base member;

cooling the fired sensor portion and heater member while the laminated sensor portion and heater member is mounted on the base member;

separating the sensor portion and heater from the base member; and

polishing the at least part of other surface of the heater member so that the at least part of ten points average roughness of the other surface of the heater member is no more than 1.71 μm, and

wherein when a water drop falls onto said part of the other surface of the heater member, the roughness of said part of the other surface of the heater member repels the water drop so that the repelled water drop is rounded, thus reducing a contact area between the other surface of the heater member and the water drop.